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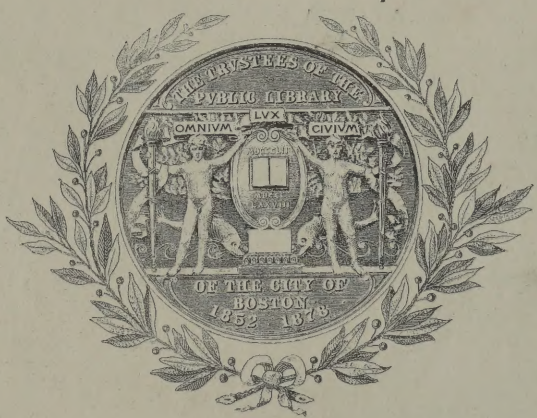

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A REPORT ON AMERICAN MUSEUM WORK

By E. E. LOWE, Ph.D., B.Sc.
Director, City Museum and Libraries
Leicester

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PUBLISHED BY THE
CARNEGIE UNITED KINGDOM
TRUSTEES

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NOTE BY THE TRUSTEES

The Trustees have pleasure in publishing this Report on modern American Museum practice as a companion to the Report on British Museums prepared by Sir Henry Miers, F.R.S., D.Sc. Students of the subject will find it convenient to read the two Reports together.

It will be understood that the opinions expressed herein are entirely those of Dr Lowe, but the Trustees feel confident that they will be useful to those who are endeavouring to develop the museum service of this country.

J. M. Mitchell,
Secretary.

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LIFE-SIZE CELLULOID MODEL OF ADULT HIPPOPOTAMUS

By courtesy of the Field Museum of Natural History, Chicago.

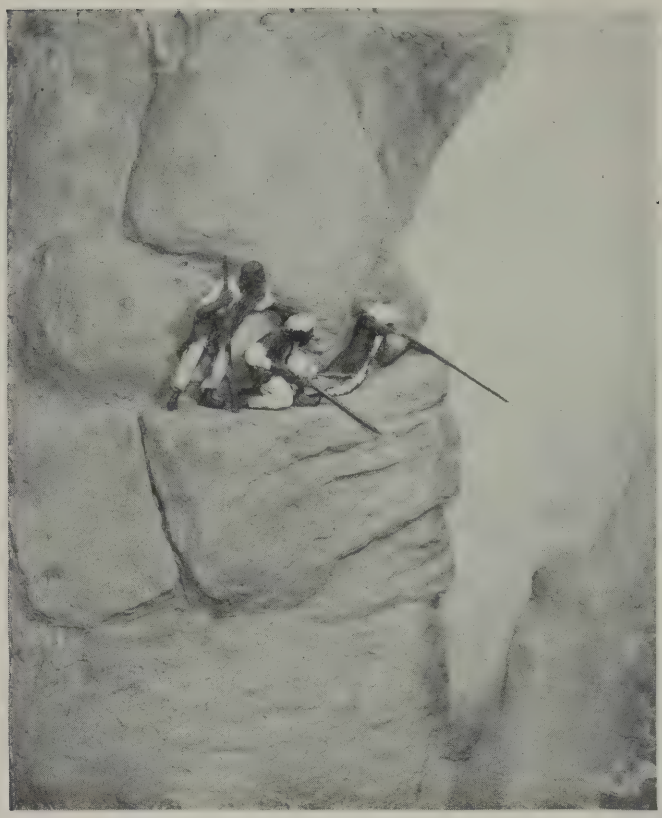


FIG. 1.—THE HABITUAL FIGHTERS, AFGHANS
Miniature group; by courtesy of the Children's Museum, Brooklyn.

FIG. 2.—APE-MAN OF JAVA (*Pithecanthropus*)
Miniature group; by courtesy of the Cleveland Museum of Art.

INTRODUCTION

All those engaged in museum and library work in Great Britain have long been familiar, through professional and other literature, with the great strides made during the last thirty years by the larger and more progressive museums and libraries of the United States. It had long been my desire to see and study their methods and results, and it was therefore an intense pleasure to receive from the Carnegie United Kingdom Trustees an invitation to proceed to America for the purpose of inspecting some of the principal museums and libraries of the United States and Canada.

The Leicester Museum and Libraries Committee readily granted the necessary leave of absence, and I was able to spend two months —May and June 1927—on the other side, during which period I visited over a hundred different institutions and was everywhere received with the greatest cordiality.

As one result of my tour of inspection and enquiry I venture to offer to the Carnegie Trustees this Report upon the subject of American museums, assuring them at the same time of my gratitude for the invaluable personal experiences upon which it is based. The Report does not pretend to be an exhaustive treatment of the subject, which would require much longer and deeper investigation and consideration than I have been able to give to the matter, but I believe that it embodies a fairly clear statement of the main characteristics of museum work in America. For the loan of the blocks and photographs used in illustration, I am deeply indebted to my American colleagues.

If I were asked to indicate just those features in which the successful museums of America present the greatest contrast with those of this country, I should point to:

(1) the source, extent and method of their chief financial support (page 11);

(2) the magnitude and excellence of their buildings (page 18);

(3) the amount of space, time, energy and money devoted to the attractive (one might almost say the spectacular) display of their exhibits (pages 31 and 46);

(4) the great development of work with the schools, and also with the children direct (page 22); and

(5) their unremitting efforts to awaken and keep alive the interest of the general public in those branches of knowledge and culture with which museums deal (page 31).

I wish to place on record my deep obligation to those Directors, Curators and other officials of American and Canadian museums who so ably and generously assisted me, and whose names are given in the list of museums visited, on pages 37 to 39. The kindness and hospitality of my American and Canadian friends and colleagues will ever be a delightful memory.

E. E. LOWE.

City Museum and Art Gallery,
Leicester, *February* 1928.

REPORT TO THE CARNEGIE UNITED KINGDOM TRUSTEES ON AMERICAN MUSEUM WORK

1. ADMINISTRATION AND FINANCE

In the United States of America there are about a thousand museums of one kind or another. Almost half have been founded by colleges or universities, and the rest by various societies or by the enthusiasm of private individuals. Many of them are small and "administered ineffectively; many are collections of exhibits, and no more; some are in so deplorable a state that they have little usefulness and tend to bring discredit upon museums generally. On the other hand many of them are active institutions operated for the public good and supported by the people." [1]

In recent years there has been a great growth of interest in the museum question, and many American museums have developed in scale, attractiveness and public service to a degree not reached in Britain except by national institutions. This growth has not been due to any action of the Federal government or to any state or municipal enterprise, but to the enthusiasm of those connected with museums and to the backing they have received from generous citizens.

Museums in America seem rarely to have been established by municipalities, and are scarcely ever financed so exclusively from local rates and taxes as is the custom here.

The governing body of an American museum, whether of science or art, is in consequence entirely different in constitution and power from that of the municipal museum in Great Britain. It consists of a board of trustees who are either the original founders of the museum or their elected representatives, and is, in practically every case, dependent for the financing of its work upon monetary endowments given or bequeathed by wealthy patrons, plus income derived from annual and other subscriptions. Often, but not

[1] Laurence Vail Coleman, *Manual for Small Museums*, Putnam's, 1927. This work, by the Director of the American Association of Museums, forms an invaluable guide to American museum practice. It also discusses principles of fundamental importance to all museum workers.

invariably, the municipality makes an annual grant towards the cost of maintenance. No generally recognised basis of municipal support has ever been evolved, and most museums receiving help from the rates have their grants determined either by supposed needs or by the attitude of the town council towards museum work. A few, however, do receive the proceeds of a specified annual tax, ranging from $\frac{1}{4}$ to $\frac{1}{3}$ mill (a mill equals one-thousandth of a dollar) per dollar of the town's assessed valuation.

Apparently there is no Federal law sanctioning the foundation or support of museums by state and civic authorities, but ten states have laws relating to museum matters. These state laws show marked disparities and most of them make inadequate provisions. The state of California, however, has an Act (passed in 1923) which empowers any county or city to purchase land, erect buildings and acquire collections for museum purposes, and to maintain the museum when established. The Act does not allocate any particular rate for maintenance, nor on the contrary does it limit the amount which may be spent. Similar legislation by other states is eminently desirable.

The vital importance of proper legislation is recognised by the American Association of Museums, and this body has embarked upon an effort to secure general and uniformly helpful laws.

There is no doubt, however, that voluntary effort is regarded as the chief power in the foundation of museums, and voluntary subscriptions as their mainstay.

One result of this form of support is that the director of the museum, the chief salaried officer of the board of trustees, has, in addition to his other responsibilities, the unenviable anxiety of seeing that the income is maintained and increased. Sometimes the president of the board is an enthusiastic and influential man who undertakes much of this responsibility, and I feel that some such arrangement should be the rule. It is surely a blunder to call upon a director of great scientific or artistic ability to spend his time in devising means of securing financial support. The only other alternative is to appoint as director a man with a *flair* for business and sufficient practical acquaintance with museum facts and principles to maintain a properly-balanced programme of development. In the case of one very important American museum this has been done with excellent results, but in most cases a director with instincts primarily scientific or artistic is saddled with at any rate some part

of the burden of seeking the financial support necessary to meet the ever-increasing demands of his institution.

Some of the means adopted to achieve this seem extraordinary to the English mind, and by way of illustration I will cite the case of one of the best museums in Philadelphia. This particular museum has an endowment of nearly £200,000, furnishing an income of £8,000 to £10,000 a year. In addition it receives annual grants amounting to £20,000, half of this sum being a grant from the city authorities.

Recently, however, some individual applied to the city for an annual grant in aid of some other project, and because it was refused he applied for an injunction to restrain the mayor from making appropriations to the museum or to any other non-municipal undertaking.

This matter is still unsettled, so the museum does not yet know whether it will lose £10,000 per annum or not.

It has, however, taken steps to increase its income from subscribers, of whom it has a large number, each contributing from 10 dollars to 500 dollars per annum. To effect this it engaged a "campaign manager" for a lump sum of £300. There are, it appears, people in the United States who make a living by organising money-getting campaigns, and the man engaged in this case immediately advertised in the local papers for solicitors—that is, not men versed in the law (who are always called lawyers or attorneys in the States) but people of refinement willing to augment their income by soliciting subscriptions. One of the main qualifications demanded was an attractive telephone voice ! It seems that people in America are expected to respond to appeals for all worthy objects, even when made over the telephone !

The successful solicitor received 20 per cent. of the first annual payment on account of every subscription secured by him, and in addition to surrendering this 20 per cent. and paying the campaign manager's fee, the museum engaged an assistant-manager at £10 per week. The result of the campaign was that the membership of this particular Philadelphia museum was doubled in three months, so that, whatever we may think of the method, it appears to have achieved the object aimed at.

It is extremely difficult to effect comparisons between the financial resources of American and English museums, but the following figures have been kindly supplied, under the headings given, by the authorities of a few selected museums, and afford some idea of relative resources :—

COMPARISON OF FINANCIAL RESOURCES OF

Place.	Population.	Total Endowment Fund.	Annual Income derived from Endowment Fund.	Annual Income from Local Rates or Taxes.
LONDON. **British Museum of Natural History.**	7,476,168 (1921)	Nil.	Nil.	Provision made in Civil Service Estimates for 1926-27, £100,873.
NEW YORK. **American Museum of Natural History.**	6,103,384 (1925)	$11,731,048.82.	$577,530.06.	$368,547.22.
PHILADELPHIA. **Pennsylvania Museum of Art.**	1,979,364 (1920)	Income only given. See next column.	$49,828.26.	$132,312.05. The city also provides and maintains the museum building, furnishing heat, light and repairs.
GLASGOW. **Art Galleries and Museum.**	1,034,069 (1921)	1. International Exhibition Surplus Fund £30,000 2. Dean Bequest £1,000 3. Hamilton Bequest £40,000	1. £2,000. 2. £50. 3. Given in 1926-27.	£20,482.
DETROIT. **City Art Museum.**	993,678 (1920)	About $100,000.	(Probably about $5,000.)	Annual appropriation of the city of Detroit for 1927, $328,900.00.
BIRMINGHAM. **Museum and Art Gallery.**	919,438 (1921)	Nil.	Nil.	£12,351.
LIVERPOOL. **Public Museums.**	803,118 (1921)	Nil.	Nil.	£10,290.
LIVERPOOL. **Walker Art Gallery.**	803,118 (1921)	£2,000.	(Probably about £100.)	Approximately £8,800.

SELECTED ENGLISH AND AMERICAN MUSEUMS

Annual Income from annual subscribers or members.	Total amount of monetary gifts during the last financial year, other than annual subscriptions.	Any other monetary income.	Year to which the figures apply.
Nil.	. .	Receipts from the sale of publications and from any other sources are applied in reduction of the cost to the taxpayer of the total given under Annual Income.	1st April 1926 to 31st March 1927.
$55,296.00.	Contributions of Trustees . . . $124,750.00 Contributions of Members and Friends . 248,787.03 Contributions of Foundations . . . 20,000.00 $393,537.03	Sale of publications and Exchanges . . $16,447.74 Trustees Building Fund 20,518.75 Interest credit balance 4,741.65 Department of Education of the City of New York . . 3,026.22 $44,734.36	Calendar year ending 31st December 1926.
$44,374.57.	$24,721.59.	...	31st May 1925.
None.	Endowments numbered (2) and (3) given during this year.	None.	1st June 1926 to 31st May 1927.
About $80,000.00.	None mentioned.	None mentioned.	1927.
Nil.	Nil.	£488 from Sale of Catalogues. Rent of Aston Hall. Reproduction Fees. Miscellaneous.	Year ended 31st March 1927.
Nil.	Nil.	Nil.	1926-27.
None.	None.	Approximately £100 from sales of catalogues, reproductions, etc.	1926-27.

COMPARISON OF FINANCIAL RESOURCES OF

Place.	Population.	Total Endowment Fund.	Annual Income derived from Endowment Fund.	Annual Income from Local Rates or Taxes.
CLEVELAND. Museum of Art.	796,836 (1920)	$2,795,675.45.	$186,347.89.	None.
CLEVELAND. Museum of Natural History (recently founded; in temporary building).	796,836 (1920)	$221,500.	$11,290.	None.
BOSTON. Museum of Fine Arts.	748,060 (1920)	$3,100,000 (net).	$139,599.00 in 1926.	Not stated; presumably nil.
MANCHESTER. Art Gallery (includes five branches).	730,561 (1921)	None.	None.	£23,614, 18s. 7d.
PITTSBURGH. Carnegie Museum.	588,343 (1920)	The Museums are departments of the Carnegie Institute, a corporation which has an endowment of $8,000,000 and makes annual appropriations to its various departments.	$105,000 annual appropriation.	None.
PITTSBURGH. Fine Art Museum.	588,343 (1920)		$105,000 annual appropriation.	None.
SHEFFIELD. Museum and Art Gallery, Weston Park.	490,639	None.	None.	Weston Park Museum, £2,655. Mappin Art Gallery, £1,985.
LEEDS. Museum.	458,232 (1921)	None.	None.	Maintenance from rates, £1,938. Contributions to special Fund for additions to collections, £500.
LEEDS. Art Gallery.	458,232 (1921)	£7,500.	£262, 10s. less income tax.	£5,550.

FIG. 1.—MINING NITRATE, CHILE, SOUTH AMERICA

Miniature group (3 ft. 9 in. long by 3 ft. 2 in. high by 3 ft. 6 in. deep); by courtesy of the Commercial Museum, Philadelphia.

FIG. 2.—AN INFORMAL GATHERING OF THE INHABITANTS

The proprietors of the Antarctic Continent disport themselves unrestrained! Miniature group; by courtesy of the Children's Museum, Brooklyn.

THE GREAT HORNED DINOSAUR

Model in portable case, about 2 feet square and 10 inches deep; by courtesy of the Field Museum of Natural History (Harris Public School Extension), Chicago.

SELECTED ENGLISH AND AMERICAN MUSEUMS—*continued.*

Annual Income from annual subscribers or members.	Total amount of monetary gifts during the last financial year, other than annual subscriptions.	Any other monetary income.	Year to which the figures apply.
$40,885.	$58,817.65.	$166,175.58 (from Trusts organised primarily for the benefit of the museum, but whose funds are not in the museum's control).	1926.
$34,287.50.	For museum work . $44,594 For land and buildings . $62,260	Sale of publications, etc. $894.49 Lecture fees . . $2,043.00 Sundries . . . $386.57	1926.
$73,000.00.	$13,122.00.	Received for special purposes, $25,000.00.	1926.
None.	None.	None.	1926-27.
None.	$4,851.29.	None.	30th June 1927.
None.	$15,000 annually from Patrons' Art Fund, used exclusively for purchase of oil paintings for permanent collection.	None.	1926-27 (Fiscal year ending 30th June 1927).
None.	None.	Grant from Board of Education . . £47 13 0 Miscellaneous . . 55 13 0	Year ending 31st March 1927.
None.	None.	None.	1926-27.
About £100 per annum from Leeds Art Collections Fund.	None.	None.	1926-27.

In all financial comparisons it should be borne in mind that the purchasing power of money in America is not the same as in England. My own conclusion, as the result of two months' experience, is that the cost of living is on the average from two to two and a half times as great in the United States as in this country.

The fact which emerges most clearly from these figures is the dependence of the museums of the United States upon voluntary support. This is generally secured by an organised system of membership, of several grades, with dues ranging, in the case of small museums, from, say, 5 dollars a year in the lowest grade to 50 dollars in the highest. Beyond these are grades of donors, patrons and benefactors who give certain specified lump sums. The view taken is that every one interested in the museum should have the opportunity to be identified with it and to share in its support, and it is stated by Mr L. V. Coleman that in many small cities from one to five per cent. of the inhabitants are so enrolled. These facts imply a contagious enthusiasm on the part of American museum workers, and a combination of generosity with a belief in the value of museums on the part of American citizens.

2. BUILDINGS AND EQUIPMENT

Owing to the vast area of the United States and to the great distances separating many of the cities, the larger museums are wider in scope and more ambitious in aim than is usually the case with English provincial museums. The buildings are also newer, larger and better equipped. Some of the art museums I visited were simply astounding in the matter of size and structure, notably:

The Metropolitan Museum of Art, New York;
The Art Museum, Cleveland;
The Art Museum, Detroit;
The Fogg Art Museum, Harvard University; and
The Pennsylvania Art Museum, Philadelphia.

Among science museums, the American Museum of Natural History in New York and the Field Museum of Natural History in Chicago are outstanding in the matter of building and equipment, and the science museums in course of erection at Buffalo and in the University of Michigan at Ann Arbor will also be first-class; but my impression was that, as a rule, the science museums had not received the same support and encouragement as those devoted to

art. For instance, in the city of Philadelphia—which already has a fine art museum and is spending £2,500,000 on a new building to house it more worthily—the museum of the Philadelphia Academy of Sciences has to display its very important collections in a building which is by no means up to the modern standard. This museum is open to the public but receives no grant from the city, and has difficulty in meeting its expenses. The Philadelphia Commercial Museum, whose collections are largely scientific and industrial, is also inadequately housed.

To describe the buildings I was privileged to inspect would be beyond the scope of the present Report, but I would like to mention certain points in their equipment which specially impressed me.

The newer museums in the north-eastern United States, such as the museum of the Rhode Island School of Design in Providence, are heated and ventilated in a most thorough and efficient manner by special machinery involving the circulation of steam, of washed and filtered air and the automatic regulation of temperature. A temperature of 70° Fahrenheit is considered to be ideal. This is much above what we should consider needful in this country, and my feeling was that American public buildings of all kinds were overheated, but I understand that Americans consider English public buildings and homes to be frightfully chilly, so I suppose it is a question of what one is accustomed to. In any case, the provision of adequate heating and ventilation must present problems varying with the nature of the climate, and the Americans appear to have given the subject very careful study. Those museums which are faced with the installation of heating and ventilating systems should certainly enquire into their methods.

Artificial lighting is a question which has not, in my opinion, been satisfactorily solved in England, though I have seen several attempts on this side for which success is claimed. The museum of the Rhode Island School of Design at Providence, the Cleveland Museum of Art, the Palace of the Legion of Honour in San Francisco and the Art Gallery of Toronto have gone far in the direction of a solution and are well worthy of study in this respect. In these places so-called "daylight" lamps have been installed between the sloping skylights in the roof and a translucent horizontal ceiling-light, and these lamps are capable of adjustment so that their beams may point in any desired direction. I happened to be in the Cleveland Art Gallery at the approach of dusk, and when the

director kindly switched on the light for my benefit it was as though the sun had come from behind a dark cloud. The differentiation of tints in the pictures—for instance, the blues and greens—appeared to be perfect. In this gallery a sheet of thin translucent paper was laid horizontally, on wire, a few inches underneath each lamp, and I am inclined to think this played an important part in the successful modification and diffusion of the light (Fig. 1). By some similar contrivance it is possible that good results might be obtained even in the absence of a horizontal ceiling light.

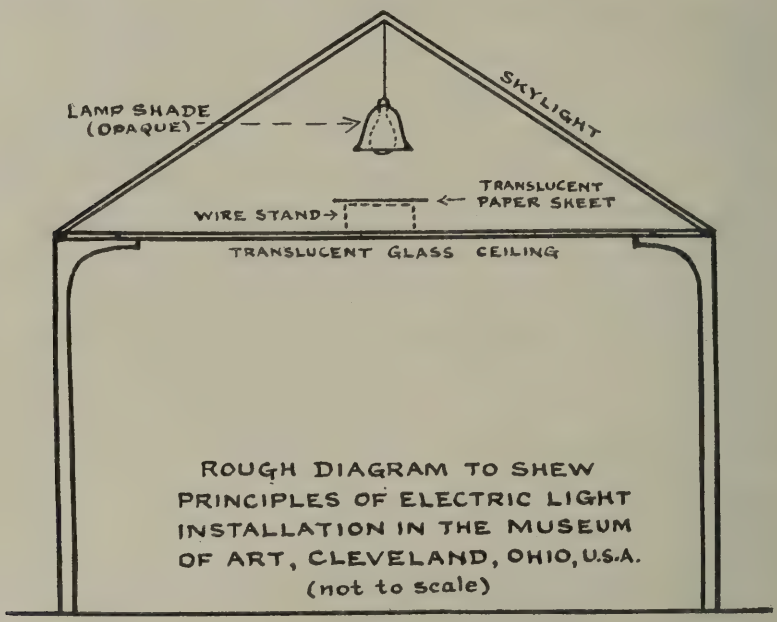


Fig. 1.

Lecture rooms are provided in all the newer museum buildings, and in some they are furnished with theatrical equipment. For instance, at the Palace of the Legion of Honour (an art museum) in San Francisco, there is a combined lecture room and theatre, provided with a full stage and orchestra, and in the projection room are two cinema projectors and a spot-light apparatus. The new art museum at Detroit also has a lecture room and theatre of similar character. The American Museum of Natural History in New York has several lecture rooms for the accommodation of various types and sizes of audience ; and wherever one went there was evidence that great importance was attached to the provision of illustrated public lectures as an integral part of the work of the museum.

In the Palace of the Legion of Honour, San Francisco, a magnificent organ is installed and is played at certain fixed hours of the

day. The pipes of the organ are situated in a ramifying space above the rooms, while the ceilings of the rooms are formed of sound-transmitting fabric. The volume of sound when the organ was played was at times awe-inspiring, but I did not find it possible to enjoy both pictorial art and stirring music at one and the same moment. I have long had a conviction, strengthened by my American experiences, that all structure, decoration and accessories in the public rooms of museums should be unobtrusive and should as far as possible serve to throw into relief the exhibited objects which constitute a museum's characteristic and distinguishing feature.

3. RELATIONS WITH UNIVERSITIES, COLLEGES AND SCHOOLS

It has already been stated that the number of museums of all kinds existing in the United States at the present time (1928) is probably about one thousand. Many of them were founded by various colleges as appendages to departments of theology. These were natural history museums, for the most part, whose function was to furnish, for the instruction of theological students, examples of the wonders of Creation. The collections were constantly added to by the efforts of those *alumni* whose work or travels brought them into contact with new animal, vegetable and mineral forms, but with the change in philosophical outlook which followed the acceptance of the evolutionary theory of Charles Darwin these collections ceased to have their original significance and most of them fell into neglect.[1] Many are, I understand, still in an indifferent state, but I saw certain museums of science, art and history associated with the universities of Harvard, Michigan, Pennsylvania, Toronto and McGill which are rich in material, in some cases well financed, and in all administered by men of great energy and ability.

At Harvard the richly endowed Fogg Art Museum was just being moved into a magnificent new building, from which it will continue its great work of cultivating in the Harvard graduate, and in all whom it can reach, an appreciation of art and a knowledge of its history. Its position is akin to that of the Fitzwilliam Museum in Cambridge, though it is probably more actively connected with university teaching.

The Agassiz and Peabody Museums at Harvard are centres of

[1] See Paul Marshall Rea, "The Social Significance of Science," *The Ohio Journal of Science*, vol. xxvi, No. 6, November 1926.

research in geology, botany, zoology, anthropology and ethnology, and repositories of magnificent collections illustrating these fields.

At the University of Michigan, Ann Arbor, a large and well-conceived building is in course of erection to contain the University's natural science collections, which are at present more or less scattered in various departments and colleges. This new and consolidated museum is evidently destined to play an increasingly prominent part in university education and scientific research.

The Royal Ontario Museum at Toronto is maintained by university and state funds and contains amazingly rich collections illustrating all branches of science, archaeology and art (except painting). The museum is really a combination of museums, each under a separate director, and all its departments are crying out for space. It is the most crowded museum within my experience, and undoubtedly calls for early and adequate extension. It was my privilege to visit it on Sunday afternoon, when it is always open to the public and attracts large crowds.

The McGill University at Montreal contains fine medical and other museums which are in process of steady development but are at present largely directed towards purely university teaching.

The most active of the university museums in public education and entertainment is, as far as my experience goes, the museum of the University of Pennsylvania in Philadelphia. Its work will not be discussed here but under the heading of " Relations with the Public " (page 31). It is only mentioned at this point to further emphasise the fact that many of the museums connected with the American and Canadian universities are extremely well developed and are taking a great part in teaching, in research, and in the promotion of knowledge and culture among the people.

I believe there are a few museums maintained in and by individual schools for the benefit of their scholars, after the manner of those at Winchester and Rugby, but I did not see any. I did, however, visit one remarkable " Educational Museum " in St Louis, maintained by the Board of Education of that city for the use of all its schools. The collections which formed its nucleus were, I understand, begged by Dr Carl G. Rathmann, Assistant Superintendent of Schools, from exhibitors at the St Louis World's Fair of 1904 when the exhibits were being disbanded. He had organised a large series of visits by school children to this World's Fair, especially to the Education Section of which he was in charge, and he realised what a powerful impression the inspection and handling of actual

objects made upon the young visitors. Hence he determined to form a museum of wide scope, the objects in which should be all available for circulation and use in the schools.

Housed in a remodelled school building, under the care of Dr Rathmann and Miss A. Meissner, it now comprises collections of natural history material, economic products, ethnological specimens, artistic prints, photographs, lantern slides, cinema films, gramophone records, etc., all prepared for circulation among the schools of St Louis. I understand that the public may visit the museum, but the material is not arranged for exhibition, except in one room, and much of it is not up to display standard. The specimens are, as far as possible, mounted in such a way that they may be handled by the children, and the care of the material when in the schools is impressed upon the scholars as an important ethical lesson.

The collections also circulate to the teachers' training schools and colleges in the area, so that the teachers may, as part of their training, acquire a knowledge of the museum's resources and gain experience in using the material for class lessons.

The Board of Education of St Louis has recently printed a catalogue, running to 175 pages, of the material available for circulation from this museum, for the information of teachers, urging them, in the introduction, to make use of the opportunities it offers. There is, however, no compulsion exercised—the teachers are free to borrow from it or not as they please. That it has abundantly proved its usefulness to the profession is demonstrated by the issues during 1925-26 (the latest available figures), when the collections asked for by the schools were as follows :—

Nature of Material.	Collections Ordered.	
Food Products	4,229 aggregating	84,580 objects.
Clothing and Shelter	2,930 aggregating	58,600 ,,
Mounted Mammals	3,200 counted as	3,200 ,,
Mounted Birds	8,998 counted as	8,998 ,,
Reptiles, Amphibia, etc.	1,690 aggregating	11,830 ,,
Insects	684 aggregating	6,840 ,,
Minerals	1,220 aggregating	12,200 ,,
Lives of Peoples	1,346 aggregating	26,920 ,,
Physical Apparatus	848 aggregating	5,088 ,,
Moving Picture Films	2,544 counted as	2,544 ,,
Lantern Slide Lessons	3,178 aggregating	79,450 ,,
Stereoscopic Views	10,205 aggregating	153,045 ,,
Photographs, Booklets	4,612 aggregating	92,240 ,,
Large Coloured Charts	8,184 counted as	8,184 ,,
Phonograph Records	7,792 counted as	7,792 ,,
Miscellaneous Material	11,042 aggregating	110,420 ,,
Total number of collections ordered	72,702 aggregating	671,931 objects.

The museum was unable to satisfy quite all the foregoing demands, but it delivered a total of 61,984 collections, aggregating 571,141 objects !

Seventeen people are employed in the service of the museum, and the material is circulated by motor vans.

This museum arose as a part of the school system of the city of St Louis, and as such it has remained. It is not a public museum in the accepted sense. There is abundant documentary evidence over and above the statistics of circulation to show that it is greatly appreciated by the teachers of the city, and there can be no doubt that it has exercised a great and valuable influence on many thousands of children.

It is time that St Louis erected a really worthy public museum of natural science to extend this influence into adult life.

[Note.—The building containing the St Louis Educational Museum was, I learn, totally wrecked after my visit by the terrible tornado of September 29, 1927, which did immense damage and caused great loss of life in St Louis. The museum has, however, been re-organised in new premises. (See Plate VIII.)]

More akin to the orthodox conception of a museum, and playing a different part in the lives and affections of the children, is the Children's Museum at Brooklyn under the able curatorship of Miss Anna B. Gallup.

It is contained in an old house built on slightly raised ground with a small amount of space surrounding it. There is no attempt at expensive or elaborate arrangement of specimens, but those shown are brightly shown—all the outside woodwork of the cases being painted white and the interior shelves and backgrounds a pale grey or other light tint.

Among the exhibits are miniature groups or "panoramas" showing such subjects as a scene in the Antarctic regions (penguins on the ice), an African scene (a lion entering a Kaffir kraal), scenes from the history of the United States (rooms in houses of early settlers with figures of the settlers in various settings), etc. Though small, one soon adjusts oneself to the scale, and the effect is very realistic (see Plates II and III).

There is also a small room given up to the subject of volcanoes, with photographs and transparencies round the walls showing, in a

PLATE V

FIG. 1.—MUSEUM MATERIAL!

Children just out of School, Philadelphia, May 1927.

FIG. 2.—THE MUSEUM HELPS THE SCHOOL

A class of pupils from Doan School working in the Armour Court of the Cleveland Museum of Art; by courtesy of the Cleveland Museum.

THE COURT OF NEWARK MUSEUM, NEW JERSEY

By courtesy of the Museum.

dramatic manner, volcanoes and geysers in action. In cases in the middle are volcanic ejectmenta, such as bombs, pumice and dust.

In another room was a case entitled "Brilliant Colour in Nature," containing butterflies, fish, coral and other specimens, specially chosen for their striking coloration—"to give a new outlook," as Miss Gallup put it.

The work is helped along by a "Women's Auxiliary" as it is called, a band of women who, by individual work and subscriptions, give systematic service to boys and girls by keeping a special assistant at the museum to help them; by providing additional lectures; purchasing specimens; and arranging field trips for the children under trained guidance. Recently this Women's Auxiliary has put pressure upon the city which has resulted in the local authority's purchasing another house and grounds adjacent to the present building, to provide a greatly needed addition of twenty rooms.

I was much struck by the way in which the children of the neighbourhood took possession of the museum. When school was dismissed children converged upon it from all directions, launched themselves through the entrance-turnstiles and careered about the rooms as though they owned the place. There was a good deal of noise and talking which was but slightly checked, and it was evident at once that the children were the primary consideration of those in charge.

Object lessons are given to classes or groups of children in and out of school hours, and the work is done in such a way, by the handling of specimens and apparatus, as to evoke an almost amusing keenness on the part of the youngsters. At the time of my visit, the boys and girls of a small class, all about thirteen years of age, were getting quite excited over the properties of a set of minerals arranged to illustrate the scale of hardness!

After a museum talk or lesson the children often play specially devised museum games which involve (1) the distribution to each child of a card upon which is written a question (the answer to which is to be found on some label or specimen in the museum), and (2) the giving of some sort of mark or credit (and ultimately a prize) to those children who are most successful in discovering the answers.

Cases of specimens are lent out not only to schools but *to individual children*, and I was told that this was a greatly valued privilege. The children are very proud of anything lent to them, and show it—and display its "points"—at home and at school.

Occasionally there is a casualty, but "the damage does not weigh against the good which is done."

Miss Gallup and her helpers are obviously enamoured of their subjects and their calling and are imbued with a great love for children. They can point to many instances of protégés who have made good in walks of life to which the museum introduced and helped them. My concluding note, made just after the visit, reads: "An inspiring place which I was sorry to leave."

Many public museums have developed, as part of their ordinary activities, a special department of school service in which collections are prepared for direct instructional use and from which they are circulated to schools and other institutions in response to the requests of teachers and other educationists. The outstanding instance is furnished by the American Museum of Natural History in New York, which began this work about 1904 and developed it to such a pitch of efficiency and to so vast an extent that in 1922 the city of New York, in recognition of the public value of its achievements, granted the sum of 570,000 dollars for the construction and equipment of a special school service building. This special building is now an active integral part of the museum, and from it is administered what the present director of the museum, Dr George H. Sherwood, has described in the 47th Annual Report as "the museum's largest and most important contribution to education."

Lecture courses both at the museum and in the schools, the circulation of nature-study collections, talks in the exhibition halls, demonstrations for blind children, the loan of more than half a million lantern slides and the lending of a thousand cinema films are numbered among the activities falling within its province. The work involves the employment of a special staff and the use of several motor vans.

In addition to all this it has provided a reference library of books on natural science to assist teachers in acquiring the knowledge requisite to make the best use of the institution's resources.

The work of the school service department is also helped by a society of private individuals, banded together under the title of the "School Nature League," who are working to promote the study of nature in the schools and are making great use of the museum's resources in their endeavours.

Undoubtedly this work has gained for the American Museum

of Natural History a measure of civic recognition which might not otherwise have been forthcoming, though the magnificent scientific achievements of the museum, under the direction of Dr F. A. Lucas and Dr G. H. Sherwood, entitle it to the liberal and enthusiastic support of the whole community.

Another remarkable instance of work with schools is that carried on by the Field Museum of Natural History in Chicago. It was originally commenced by the museum out of its own material and funds, but has within the last few years been specially endowed by private benefactors. Four guide-lecturers attached to the museum go out to the schools armed with lanterns and slides and give lectures on museum subjects. In 1926 they gave 1070 (one thousand and seventy) such lectures. In addition to this work, talks and lectures to children are given by them in the museum itself and by lecturers specially engaged. The value of these activities so impressed a lady who saw the droves of children they attracted to the museum, that she (her name is Mrs Anna Louise Raymond) has willed to the museum trustees the sum of 500,000 dollars (about £104,000) to maintain and extend the work.

In addition to this the Field Museum of Natural History has a circulation department which prepares and distributes to schools special cases illustrating the past and present life of America, plant and animal products, the manufacture of familiar substances and articles, etc. This department is maintained from an endowment of 300,000 dollars provided by Mr Norman Wait Harris and his family, and is called after them "The Harris School Extension of the Field Museum of Natural History." Ten persons are employed and two motors are kept in active service during the whole of the school year. The department now possesses about a thousand cases of fairly uniform type (mahogany, about 2 feet square and from 4 to 10 inches deep). Each is furnished with a folding frame containing a clear description and is provided with hooks to hang it up on a wall or stand (Plate IV). The cases are in circulation among three hundred and fifty schools, and in addition numbers of them are lent on request to clubs, societies and branch libraries.

At the Art Institute of Chicago, which is both an art school and a museum of art, there is a special children's room devoted to periodical exhibitions consisting of the work of school children or of collections specially interesting to children. Recent exhibitions had

consisted, for instance, of silhouettes and animal sculpture. For circulation to schools and other bodies the Art Institute is preparing some cases or frames of excellent quality dealing with art subjects. Among those I saw were frames illustrating the arts of enamelling and wood-block cutting, Japanese lacquer and lithography. Each case was about 3 feet square and 3 inches deep and made to hang on the wall. They were of a very superior type indeed, both as regards the specimens used, tastefulness in display and clearness in labelling. The director of the Art Institute, Dr Harsche, told me that every new school building in Chicago is to have a room set aside as a museum of art, so great is the belief of the present school board in the good influence of things of beauty.

In some cases the local board of education works in close co-operation with the local museums in promoting the use by teachers, students and school children of the special facilities the museums offer.

This is the case, for example, at the museum of the University of Pennsylvania and at the Commercial Museum, both in Philadelphia; at the Cleveland Museum of Art (Plate V, Fig. 2) and the Cleveland Museum of Natural History; and at the Carnegie Museum and Art Gallery in Pittsburgh. Here there are systems of talks, lectures and circulating collections similar to those already described, but teachers are stationed in the museums and paid by the local boards of education to instruct the classes of school children which come to them, an arrangement which has been highly successful in this country at Manchester.

At Pittsburgh the museum runs a "museum appreciation" class for students of the university and others who intend to take up teaching; and the university for its part offers "museum scholarships" to graduates who wish to train either as teachers or for museum posts—half the time of the student being given to work in or for the museum.

At the Museum of the University of Pennsylvania and at the Commercial Museum in Philadelphia some of the courses for children are arranged to fit the syllabuses laid down by the local board of education for the various school grades (or forms, or standards, as we term them). This is the case, also, at the Cleveland Museums.

The Commercial Museum of Philadelphia has from time to time received grants from the State to enable it to prepare collections

illustrating plant and animal products, manufactures, etc., for issue to schools. These are put up in cabinets resembling those used for insects, each drawer containing a set of exhibits dealing with some one particular subject such as cotton, silk, rice, etc. These cabinets are given to the schools outright, not lent, because many of the schools are so remote from the museum and the cabinets are used so continuously that it is not considered practical to circulate them from one school to another.

In spite of the enormous amount of work which is being done by museums for the schools, of which I have given some indication, the active representatives of both parties are not satisfied either with the present state of affairs or with the rate of progress, and at the instigation of the American Association of Museums a joint committee has recently been appointed, consisting of members of that body together with representatives of the National Education Association, to bring about a closer touch between the two associations and to promote better co-operation and better mutual service.

This joint committee has recently reported to both bodies, and its findings have been circulated to museums, to education authorities and to the educational press.

The general principles laid down in the Report are contained in its first ten paragraphs and seem to be worth quoting. They are as follows :—

1. The schools and the museums should co-operate to enrich progressively the intellectual, cultural and emotional life of the people.
2. Such enrichment will come to the individual as the result of experiences with Nature at first hand, with works of art, with museum specimens, and with other original objects having human interest.
3. The schools should lead in placing emphasis on nature study in the great outdoor museum, where everything is alive. To promote such activity, provision should be made for generous school gardens, for public parks within walking distance of every school building, and for free transportation to some observational area.
4. These primary experiences should be supplemented by contact with the material gathered in museums of science, art, history and industry, whose contents should be placed freely at the service of the public schools.

5. The schools should make use of this material to the fullest possible extent.
6. To promote such mutual service, normal schools and teachers' colleges should train their students in observation and exposition, through excursions into the open and trips to the museums, and give them systematic training in using museum materials.
7. The expenses of providing the materials required for observation and for circulating, and keeping in proper condition the travelling materials, should be shared between the museums and the boards of education upon some mutually satisfactory basis.
8. A representative of the schools should be selected to co-operate with the supervisors and teachers and with the museum authorities in selecting the loan material. He should also be charged with the responsibility of assembling, caring for and circulating from a distributing centre all the material supplied by the museums.
9. Circulating material should not be considered as an adequate substitute for occasional visits to the central museums. Pupils should visit museums to receive instruction in subjects to be illustrated by materials which cannot be put in circulation and to become acquainted with the great educational institutions other than their schools.
10. Wherever public museums are not established, steps should be taken to open school museums or children's museums.

It should be pointed out that the taking of children to museums and the borrowing of circulating collections from museums are in all cases left entirely to the discretion of the teachers. There has been no compulsion on the part of the school boards nor is it intended that there should be. Therefore, the fact that teachers have been, of their own free will, so ready to seize and to develop the opportunities offered to them is fairly conclusive evidence that they regard visual education of the museum type as being of great value to the children.

Many museums in Great Britain, for example Hull, Leeds, Leicester, Liverpool, Manchester, Salford, Sheffield and Warrington, are already giving service to the schools both with and without the co-operation of the local education committee. If systematic co-

operation on the lines suggested by the American joint report became general here, a great extension of the work would result. Not only would this add much of value to the lives of children which would otherwise be lacking, but museums themselves would in the near future be more widely appreciated and better comprehended.

4. RELATIONS WITH THE PUBLIC

The attitude towards the community of those American museums which are supported largely by subscriptions (that is to say, the majority of the active ones) is naturally influenced by the existence of a body of subscribers who have to be given some exclusive privilege. This involves such arrangements as the closing of the museum to non-subscribers on certain days except on payment of an entrance fee ; the provision of special lectures and talks limited to members and of reserved seats at free lectures ; the free receipt of all publications of the museum, etc. Apart from these obligations, however, there can be no doubt that American museums are making strenuous efforts to interest the general public in their work and to provide all-comers with attractive fare and with aids to its digestion. In the most up-to-date museums the exhibits, whether in the field of science, or art, or history, are dramatically displayed and well labelled, and one of the features in which American museums differ from ours is in the amount of space, time and money devoted to the more spectacular aspects of museum work. In addition, personal guides, or " docents " as they are called, are at the service of visitors, either free or for a small charge, in most of the larger museums.

I gathered that the " docent " service is not always so largely called for by the public as it should be (this is the experience also in at least one museum on this side), but no doubt this apparent lack of appreciation is in some measure due to lack of advertisement, which is expensive and cannot be afforded when the service is given free or at a nominal charge. At present, therefore, the main work of the " docents " is with school children, but there is no doubt that there will be an increase in the demand for their services on the part of adults. The museum at Newark, New Jersey, has trained a number of young women for service as museum " docents," and at the Washington conference of the American Association of Museums, at which several of them were present, the opinion was voiced that they were the forerunners of a large army.

Though publicity is a thing we have rather shrunk from in the museums of this country, it is indulged in to an extensive degree in America. The existence of a large body of subscribers who must be kept interested involves the employment of publicity assistants, and, apart from this, American curators evidently hold the view that it is of little use spending large sums of money upon museum work unless steps are taken to bring it to the notice of those for whom it is intended. Hence the output of bulletins, leaflets, circulars, newspaper articles and advertisements is relatively much greater than in England.

Many museums issue a regular bulletin—say once a quarter—and the Commercial Museum at Philadelphia publishes two journals: a monthly one called *Commercial America*, which aims at keeping the foreign buyer informed as to the resources and manufactured products of the United States; and a weekly *Export Bulletin*, which sets before the American manufacturer and trader up-to-date information as to the requirements of foreign countries and points out the possibility of new markets. This museum also maintains a bureau of information and a staff of translators, and is really a combination of a museum with a chamber of commerce, of far-reaching scope and influence. In order to be able to supply up-to-date scientific and commercial information to enquirers, the museum has sent members of its own staff to China, Japan, Australia, New Zealand, Africa, South America, etc., and still continues to send them. These investigators return not only primed with information, but laden with specimens and samples which are kept in the museum. There is no museum in England comparable with the Commercial Museum of Philadelphia in the matter of scope, nor do I know any which plays such a direct and practically helpful part in business affairs. As the result of its manifold activities the Commercial Museum has now outgrown the buildings in which it is contained, and I feel that the value of its work and the indebtedness of so many sides of the community to this institution should stimulate the city of Philadelphia to furnish it with a new and worthy home and with increased financial resources.

Reverting to the matter of relations with the community in general, an immense amount of " museum extension " work is done by the provision of public lectures on subjects related to the work and scope of museums. In all the newer museums one or more lecture rooms have been provided, and these are not only used for

PLATE VII

THE LIBRARY, NEWARK MUSEUM, NEW JERSEY

By courtesy of the Museum.

DELIVERY DEPARTMENT, ST LOUIS EDUCATIONAL MUSEUM

"The 28 Loading Station Signs indicate a definite position for placing to-morrow's ready packed collections for each one of the 140 Public Schools of St Louis" (Miss A. Meissner, Curator). Photograph by courtesy of the Educational Museum.

public lectures arranged by the museum trustees, but are frequently lent to societies whose aims are akin to those of the museum, for their own private meetings and lectures. The museum authorities make it part of their policy to encourage the closest possible association between themselves and all bodies working for the advancement of learning or for public enlightenment.

The Newark Museum is remarkable for the special efforts which its able director, Mr John Cotton Dana, has made to develop its activities along those lines most likely to be helpful to the surrounding community. In addition to affording interesting and practical information in connection with local industry and the natural resources of the district, the museum endeavours by careful selection and tasteful arrangement (see Plates VI and VII) to emphasise those qualities which make for beauty and fitness in everyday things. This is an aspect of the art work of museums which to my mind is not sufficiently developed in America—nor for that matter in England.

The Newark Museum even lends prints of various kinds to private individuals for study and for home decoration. The borrower has first to buy a cheap frame from the museum ; the museum then inserts a print in it and allows a frequent exchange. A similar scheme has been tried by the Art Museum of Detroit, but there, I understood, the people have not shown much inclination to avail themselves of the opportunity placed before them.

Several museums lend, in a more or less spasmodic way, pictures, historic objects and natural history specimens to branch libraries and to institutions which will undertake their safe keeping, and it seems to me that an immense amount of valuable museum extension work might be done on these lines in the British Isles. If the chief existing museums could have their resources augmented to enable them to carry out their present work more effectively and to organise for circulation to surrounding districts (to village halls, institutes, etc.) well-mounted collections of works of art and of scientific specimens, furnished with adequate descriptive matter and accompanied in each case by a travelling collection of books upon the branch of art, or science, or history which the collection illustrated, we should go beyond anything I saw in America, and do, in the aggregate, an immeasurable amount of real public service.

5. THE AMERICAN ASSOCIATION OF MUSEUMS

My tour of American museums and libraries was so arranged as to allow of attending the annual conference of the American Association of Museums at Washington from May 23rd to 25th, and this proved a most profitable experience.

I arrived in Washington on May 21st and had the great advantage of long preliminary discussions with Mr Laurence Vail Coleman, the Director of the Association. He and his wife were kindness personified and gave me gracious hospitality and unremitting attention at what must have been for them a very busy and difficult time.

The American Association of Museums was founded about twenty years ago by a number of enthusiastic museum officials, but it was not until 1923 that it launched a vigorous and aggressive campaign for the extension and advancement of museum work. Its objects are stated to be " to promote the welfare of museums, to increase and diffuse knowledge of all matters relating to them, and to encourage helpful relations among museums and those interested in them." These objects it seeks to attain by general publicity work ; by the publication of technical journals, pamphlets and news ; by giving expert advice and service in the formation of new museums ; by acting as a bureau of information on all museum matters ; and by fostering the training of men and women for service in museums.

In the year 1923 it was given permanent headquarters in the Smithsonian Institution, Washington, D.C., and succeeded in securing from the Laura Spelman Rockefeller Memorial and other sources a sum of approximately £18,000 " for a three-year demonstration of the value of organised co-operation among museums." During this three-year period the Association grew beyond all expectation and found a multitude of opportunities for usefulness. It has now a whole-time staff consisting of director, assistant-secretary, and several clerical assistants, who are all actively engaged in pressing forward the work of the Association in its various fields.

One very original achievement of the Association, referred to at the Washington conference, was the building of a museum in the Yosemite National Park with the aid of a grant of 75,000 dollars from the Laura Spelman Rockefeller Memorial. This museum was designed by the Association to facilitate the understanding of the natural wonders displayed by the region and has already proved

of immense value to tourists and students. It has now been handed over to the United States Government, which is responsible for the maintenance of the National Park. The success of this pioneer outdoor museum has led to the establishment of a second at Bear Mountain in New York State; while a third is to be built at the Grand Canyon in Arizona, the site of which I was privileged to see. All are so placed as to avoid interference with the landscape, and are designed to be unobtrusive and in keeping with their surroundings.

Through the Association, the Carnegie Corporation of New York has financed an investigation into the principles underlying methods of display in art museums. This is still in progress under expert direction and promises results of great practical value.

But to my mind the most important and far-reaching of the achievements announced at the conference was the publication by the Association of a book entitled *Manual for Small Museums*, written by its present Director, Mr Laurence Vail Coleman. This work is the outcome of a survey made by Mr Coleman in 1924-5-6 with the aid of a grant from the Carnegie Corporation of New York. Mr Coleman visited some three hundred museums in America, largely to study the conditions of museums in small communities, and his experiences made plain the need for a comprehensive handbook dealing with museum organisation and aims. This book he has now produced with skill and clearness, and it forms a first-class guide to the fundamental principles to be observed in museum work in America. Much of it is of universal application, and the book should be read by all those actively engaged in museum work in this country, where, to our shame, no such comprehensive manual has ever been produced. Its price is five dollars.

The Association has a practically assured income of 30,000 dollars a year for the next three years, and is now seeking to establish an endowment fund to guarantee the successful continuance of its activities. Prominent among the plans to be brought into immediate operation is a scheme of scholarships to enable university graduates to spend a year acquiring museum knowledge and experience so as to fit them for the museum appointments now cropping up in increasing numbers. This question of the training of curators is one which has been frequently before our own Association without any definite action resulting, so the American experiment should have a special interest for us.

Our own Museums Association has for nearly forty years exerted

a great and helpful influence on the museum workers of this country and upon museum development here. At the present time the Association is stronger than it has ever been, and if, like the American Association, it could secure permanent headquarters, a whole-time staff, and the funds necessary for development in accordance with the conditions prevailing in this country, it could render much greater assistance to museums and through them to the cause of education. The potentialities of our museums for public enlightenment and rational recreation are immense, though but dimly realised save by those most intimately connected with them. To develop their potentialities calls for more than individual work and self-sacrifice: a stronger organisation is demanded. Let us continue to strive for it.

The conference of the American Association, under the able and genial Presidency of Mr Chauncey J. Hamlin, was marked throughout by enthusiasm and general good fellowship. It provided me with valued opportunities for meeting in friendly discussion many eminent American workers in the cause of museums, and I feel that I cannot speak too often or too warmly of the cordiality with which I was received and helped. The papers read and business brought forward showed that our American colleagues' problems are closely akin to our own, and I conclude my Report with an earnest hope that, as time goes on, we shall develop a still closer friendship with them, built upon common interests and cemented by mutual respect and regard.

E. E. LOWE.

City Museum and Art Gallery,
Leicester, *February* 1928.

LIST OF AMERICAN AND CANADIAN MUSEUMS VISITED

(To the Directors, Curators and other officials whose names are inserted in this list I am indebted for indispensable assistance. Their friendliness and hospitality will ever be gratefully remembered.
E. E. L.)

ALBANY.
New York State Museum (Dr Charles C. Adams, Director).

ANN ARBOR.
Museum of the University of Michigan (Dr A. G. Ruthven).

BOSTON.
Museum of Fine Arts (Mr E. J. Holmes, Director).
Museum of the Boston Natural History Society.
The Gardner Museum.
Massachusetts State House.
Museum of the Society for the Preservation of New England Buildings.

BROOKLYN.
Children's Museum (Miss Anna B. Gallup).

BUFFALO.
Albright Art Gallery.

CHICAGO.
Field Museum of Natural History (Dr D. C. Davies, Director; Dr O. C. Farrington, Dr B. E. Dahlgren, Dr W. H. Osgood, Mr S. C. Simms, Mr Henry Field, Mrs Dorothy R. Cockrell).

CLEVELAND.
Museum of Natural History (Dr Paul Marshall Rea, Director).
Museum of Art (Mr Frederic A. Whiting, Director).

DETROIT.
City Art Museum.

HARVARD UNIVERSITY.
Fogg Museum of Art.
Germanic Museum.
Peabody Museum.
Agassiz Museum (of Natural Science).

Los Angeles.

County Museum (Dr W. A. Bryan, Director).

Montreal.

McGill University (Mr E. L. Judah, Curator of Museums).

Redpath Museum.

Medical Museum.

Pathological Museum.

McCorn Museum.

Chateau de Ramesay.

Montreal Art Gallery.

Newark.

Newark Museum (Mr John Cotton Dana, Director; Miss Kendall, Miss Margaret Gates, Mrs Gould, Miss Coffey).

New York.

American Museum of Natural History (Dr F. A. Lucas, Hon. Director; Dr G. H. Sherwood, Director; Dr Fisher).

Metropolitan Museum of Art (Mr H. W. Kent, Secretary; Miss Marshall).

Philadelphia.

Commercial Museum (Mr C. R. Toothaker, Curator).

Pennsylvania University Museum (Miss J. M. McHugh, Secretary; Mrs Cornelia Dam, Chief Docent).

Pennsylvania Museum of Art (Mr Fiske Kimball, Director; Mr E. H. Pedersen, Assistant).

Pittsburgh.

Carnegie Museum (Dr A. Avinoff, Director).

Carnegie Institute of Fine Arts.

Providence.

Museum of the Rhode Island School of Design (Mr and Mrs L. Earle Rowe).

Quebec.

Museum at the Legislative Building.

Museum of the Laval University.

Sacramento.

Crocker Art Gallery.

Salt Lake City.

Museums at Information Bureau of Mormon Temple and the University of Utah (President Heber J. Grant, Professor Frederick J. Pack, Dr George W. Middleton)

San Francisco.

Museum of the Californian Academy of Sciences (Dr B. W. Evermann).

Steinhart Aquarium.

De Young Museum (Mr G. H. Barron).

Palace of the Legion of Honour (Major and Mrs. Quinton).

St Louis.

Educational Museum (Dr C. G. Rathmann ; Miss A. Meissner).

Toronto.

Art Gallery of Toronto (Mr E. R. Greig, Director).

Royal Ontario Museums (Professor C. T. Currelly, Professor T. L. Walker).

Washington.

U.S. National Museum (Natural Science) (Dr G. P. Merrill, Dr Foshag).

U.S. National Museum (Technology).

Freer Art Gallery.

Corcoran Art Gallery.

Museum of the American Red Cross.

Pan American Building.

Museum of Physical Science.

West Point.

Museum of the Military Academy.

APPENDIX

THE first part of this report deals chiefly with those aspects of the work of American Museums which seem to be of fairly general interest. In the hope of making the report of greater practical value to those professionally engaged in museum work, I append the following notes upon structure, fittings, cases, preparation, mounting, etc. Many of the points will not be new to those who read this report, but I hope that every colleague may find something of interest therein.

EXHIBITION ROOMS, WORK-ROOMS, ETC.

Size of rooms.

One result of my American tour is a decided leaning towards small rooms, or at any rate towards rooms which are not too large for their contents. Some of the newer museums had rooms and halls so spacious as to dwarf even the largest objects, thus detracting from the impressiveness and interest of the exhibits. In a fairly small room the museum curator has a chance to create an "atmosphere" appropriate to one particular group or class of objects, thus helping the visitor to get on intimate terms with what is presented to him. A large room is almost bound to offer him many distractions, in the form of unrelated specimens, for instance, and to induce a sense of remoteness.

The Freer Art Gallery in Washington impressed me as being exceptionally well designed from this point of view. I did not measure the rooms in which the pictures are hung, but I should judge they were about 30 feet square. They were also low, and the top light, though sufficient, was not unduly brilliant. The walls were a warm stone-grey, with only a narrow skirting-board at the base, thus permitting large pictures to be hung with the bottom of the frame quite near the floor, as is done in some English galleries. Portraits of life-size and full length can thus be brought almost to the visitor's own level, with greatly increased effect. Large landscapes gain also by being dropped to eye-level. The subdued character of the lighting and the refined tone of the walls in these rooms had a distinct effect on me, and must tend to produce a desirable reverential attitude on the part of visitors in general.

The Museum of the University of Pennsylvania has also succeeded in maintaining harmony between the building and its contents. For instance, a lofty circular rotunda, which at the time of my visit housed large Chinese pottery figures (human, equine, etc.), was lined with speckled grey bricks, laid with wide grey cement joints, and floored with grey-brown terrazzo, cut into slabs of about 5 feet by 3 feet 6 inches. Though a large hall, its architectural features and general tone were subdued and tasteful, thus setting off the displayed objects to great advantage.

Lighting of rooms.

The lighting of exhibition rooms is a vitally important matter, whether it be by daylight through side windows or through skylights, or by artificial light. I came across side windows which caused very disturbing reflections, even in new buildings. Those which gave a good light, free from this defect, had sills

PLATE IX

PLANT MODELS IN WAX, CELLULOID, AND GLASS

Flowering and fruiting branches of the Queen Crape-Myrtle, *Lagerstroemia Speciosa*, modelled in the Field Museum of Natural History, Chicago; by courtesy of the Field Museum.

PLATE X

MINING ANTHRACITE

A life-size group in the Commercial Museum, Philadelphia; by courtesy of the Commercial Museum.

above the eye-level of the visitors, and this, I am convinced, is an important principle. The use of ground or pressed glass to diffuse the light is also an advantage. At any rate, in certain rooms of the geological department in the United States National Museum at Washington, which had windows on one side only, of ground glass, the windows commencing low down and reaching up almost to the ceiling, the lighting effect seemed very good. A museum colleague who was with me criticised the windows as making one feel shut in. He thought we ought to be able to look out through them into the surrounding park. To me it seemed that the museum authorities were right in limiting attention to the contents of the room, but possibly some slighter screen than ground glass would have been pleasanter and equally effective in diffusing the light ; and a higher sill would have been a further improvement.

In the museum at Newark, New Jersey, diffusion of light from side windows was attained by the use of tasteful buff-grey curtains of translucent cloth. The effect was very good, and the material had evidently been chosen with due consideration.

The subject of reflection has been fully discussed by Mr S. Hurst Seager, F.R.I.B.A., in the *Museums Journal*, vol. 20, 1920, page 1 *et seq.*, and the *Journal of the Royal Institute of British Architects*, 3rd series, vol. xxx, page 121 *et seq.* The Department of Scientific and Industrial Research has also published a very important illustrated account of researches into this and related topics, under the title *The Natural Lighting of Picture Galleries* (H.M. Stationery Office, 1927, price 1s. 6d.). These papers should be read carefully by all who have in hand or in prospect the designing of museum and art gallery buildings.

In rooms lighted from the top by skylights, it is frequently difficult to control the amount of light admitted and to keep out direct sunlight. An exhibition room on the top floor of the new Philadelphia Public Library has, however, been fitted with an appliance which appears to be perfect. The sloping skylights are crossed by movable slats, like the slats of a venetian blind, and these can be opened and closed to any desired extent merely by pressing an electric button in the exhibition room. The apparatus is, I understand, patented under the name " Ventalighter."

Colour of walls.

It is evident that our American colleagues are thoroughly alive to the importance of wall-colour in exhibition rooms, and I saw many interesting experiments—particularly in the museum of the Rhode Island School of Design in Providence, where Mr and Mrs Earle Rowe have worked out many problems in museum installation with great success. In some of the rooms of this museum the walls had received a rough " float finish " only. This had been painted in buff colour, and then dabbed with two sponges, each soaked in a different colour (selected to tone with the exhibits). The colour in the sponges was taken up by the rough projections of the " float finish," and the final result was a buff ground covered with intermingled spots and blotches of two other harmonising colours. In this way the wall was given a most pleasing and satisfactory colour and texture which could be altered at no very great expense.

Canvas, linen and tapestry are in general use all over America for covering walls intended for pictures. At the Fogg Museum of Art, Harvard University, some small top-lighted picture rooms had their walls covered with unbleached

linen, underlaid with waterproof paper. It was said that the black surface of the latter gave a greatly improved tone to the linen. The doorways in these rooms were not framed by heavy mouldings. They were simply rectangular openings marked off from the picture-hanging space by a line of gimp! The general effect was simple, restful and pleasing.

With regard to the colour of the walls of rooms intended for pictures, my American experience fully confirmed the opinion I had already formed, as the result of experiments and the inspection of many galleries, that a colour which is not too light, and which when reflected in the glass of pictures does not offer strong contrast with the reflection of the walls and furniture, is the colour to aim at.

Offices and storage.

But the design and treatment of rooms for exhibition purposes has not absorbed the attention of our American colleagues to the neglect of the less obtrusive but equally important details. Careful consideration has been given in all the newer American museums to the needs of the staff—to the provision of roomy, airy and well-lighted offices, studios, laboratories and work-rooms. These essential matters have too often been regarded as of secondary importance in English museums, but it is to be hoped that no museum will be designed or erected in the future without adequate accommodation for the staff and plenty of room for its multitudinous activities.

Storage space, too, whether for reserve collections or for material of doubtful utility, is another necessity we have often neglected to provide, but in the Fogg Art Museum at Harvard, for instance, a great basement is allotted to the reception of specimens and goods and to the storage of objects not on public exhibition.

The method of storing framed paintings in this museum was very convenient. They were hooked on to large screens of stiff wire (probably about 18 feet by 8 feet, but I did not take measurements). These screens hung vertically from the ceiling. They were suspended close together, but each could easily be drawn out separately by hand. This was made possible by wheels or pulleys fixed to the top of each screen. The screen was hung by these from a horizontal rail or rod attached to the ceiling. Each rail was twice the length of the screen hanging from it, and, in order to examine, remove or insert a picture, it was only necessary to pull out the screen along the projecting part of the rail, pushing it back between its fellows when the operation was finished. Similar screens were in use at Newark, N.J., and Providence, R.I. Librarians are familiar with bookstacks which roll to and fro in this way, and the principle seems especially applicable to things so bulky and difficult of accessible storage as pictures.

Closing signals.

I do not think the question of the appropriateness or otherwise of closing-time signals is one that many curators have considered. What the general method may be I know not, but in one English museum a raucous handbell has been rung daily with great gusto, for untold years. At the Cleveland Museum of Art, however, they have evidently determined that the visitor shall not have his dream of beauty rudely shattered at the last moment, so the closing signal is sounded on a xylophone of four or five harmonious notes. A

beautifully melodious sound gradually penetrates to the utmost recesses of the building, graciously informing the visitor that he must bring his visit to a close. Perhaps to the visitor the difference may appear as that between " Get out ; and good riddance " and " Sorry to part with you ; please come again." This is a point worth considering.

Installation, Exhibition, Preparation

Cases.

American museums make great use of bronze-framed cases for exhibition purposes, and these are evidently much more easily obtainable in a variety of forms in America than in England. Table cases in this metal are light and elegant in appearance, and it is unfortunate that they are not more readily available in Britain.

In two or three places I saw cases with framework of unpolished walnut which were very pleasing in appearance. Pedestals (for sculpture, vases, etc.) of the same wood, bearing only a beeswax polish, were also very satisfactory. We have, perhaps, made too free use of french polish on our English museum furniture, and, at times, hidden under it qualities which should have been left to view. It is extremely difficult to get the modern french polisher to work with moderation and discretion.

At the museum in Providence, Mr Earle Rowe demonstrated to me an extremely useful appliance for lifting and moving cases called the " Striebing Lift-Truck." By its use one person can raise and move a case, with its contents, which it would not be safe for four men to attempt to carry. The truck was run under a case similar in size and form to those lent to provincial museums by the Victoria and Albert Museum for the display of Circulation Department material. It was quickly adjusted to the case, and then, by the action of a lever, the case was raised from the floor, wheeled on the truck to its new position, and by means of the appliance lowered so gently to the floor that no jar was perceptible.

An effective lining for table cases was in use in the Newark Museum. The bottom of each case was soft and slightly " cushiony," and on this surface the specimens rested in a more pleasing fashion than on hard wood or smooth paper. To produce it, a false bottom of beaver board had been covered with cellu-packing (a soft, thick crinkled paper, like crêpe), and Japanese sponge-cloth stretched over it. The effect of the cellu-packing under the fabric was to give the latter the soft, slightly cushiony surface above mentioned, and to make the specimens look more precious—as though they were displayed in a jeweller's case.

Museum objects in motion.

Motion, or the possibility of producing it, always attracts attention and arouses interest—a moving figure in a shop window, for instance, or a penny-in-the-slot football match ! This has been turned to educational ends in the Science Museum, South Kensington, where, in the case of many machinery models, the visitor is invited to press a switch and so put the model in motion, the better to understand its mechanism. In the Boston Museum of Fine Arts there is a variant of this idea. The visitor is invited to help himself to a glimpse of all sides of an object of which only one side can be seen from the front of the case. This is arranged by mounting the object (for instance, a vase) on a turn-

table, which the visitor can manipulate by turning a knob at the front of the case—thus rotating the object and presenting all sides to the front in turn.

At the Washington Conference of the American Association of Museums the suggestion was put forward that more use should be made of the motion method of attracting attention, and that selected museum objects should be made to move automatically—even natural history specimens! Some years ago I saw this idea in action in a German museum. A circular case containing a number of specimens of the genus *Morpho* (large butterflies with brilliant iridescent wings) was made to spin on its axis, thus causing a wonderful play of colour for the delectation of the visitor. I believe that the method might be advantageously used to a limited extent in the display of other objects with similar "points"—scintillating gem-stones, polished labradorite, birds with iridescent plumage, and the like.

Mounting and modelling.

Undoubtedly the American museums have made great advances in the art of mounting specimens and making models—especially the American Museum of Natural History in New York and the Field Museum of Natural History in Chicago. It is true that they have had staff and funds to work with which have been denied to us, but let us not on that account withhold credit. Every facility was given to me of seeing technical methods in operation, and no pains were spared to make details clear.

Mounting mammals.

The method of mounting mammals at the Field Museum of Natural History seemed calculated to produce finely modelled specimens. In the case of an antelope, for example, the skeleton is first set up, and on this a model of the carcase is built in clay. When the clay is hard, a plaster cast of the whole model is taken in two bi-lateral halves. Into both halves of the mould thus produced, burlap is glued—three layers of it, one after the other—and finally a layer of plaster, until the whole lining is about three-quarters of an inch thick. When all this has set hard, the mould is made wet, to soften the glue holding down the first layer of burlap, and the burlap half-model can then be lifted out bodily. The two half-models are then joined, and the result is a complete model of the animal as it appeared when skinned. Over this burlap-model, the softened skin is drawn and *cemented down*. There is, of course, no skeleton within, and if it is desired to show the teeth, they have to be modelled. The final result as exhibited to me was a convincingly life-like animal.

In the Harris School Extension of the Field Museum (see page 27) I was shown an extraordinarily light wood, called "balsa" wood, from South America, which could be easily cut and carved and was sometimes used to make the internal body for a bird. It was almost as light as pith and should have many applications in museum work.

Model vertebrates in celluloid.

It has always been difficult to make life-like specimens of large naked-skinned mammals and of reptiles. We may not all agree that a good model is better than an indifferent real specimen, but the Field Museum of Natural History, Chicago, has decided that it is, and has made a group of alligators, basking on a mud bank, out of celluloid, absolutely true to life. More unbelievable still, they have produced, of all things, a huge celluloid hippopotamus! This had only just been finished and was not yet on exhibition. I was one of the first outsiders to see it. All I can say is that it was perfection,

far ahead of any mounted specimen in the matter of life-like appearance. Its mouth and ears, for instance, had the otherwise inimitable translucency of living tissue. (Plate I.)

Thanks to the courtesy of the Field Museum staff I can tell how it was done. First one must get a real hippopotamus and mount it by erecting the skeleton and then building upon it a model of the muscular body with clay, as previously described. Over this the skin is to be drawn and the hippo finished as though he were going to be put on show as a mounted skin. A plaster mould is now to be made in several pieces from this mounted specimen. When the mould is dry, the parts are to be removed and afterwards put together so as to enclose an empty space the precise size and shape of the hippopotamus. The plaster mould is then to be painted inside, part at a time, with

(1) clear celluloid solution, and
(2) celluloid tinted with the colours of the living animal, in basic (not acid) pigments.

To this second celluloid coat are to be glued reinforcing coats of muslin, burlap, etc., and when the whole is dry the plaster must be carefully removed and a perfect hippopotamus will be disclosed—perhaps! At any rate that is the method in outline, and the result achieved by the Field Museum leaves nothing to be desired.

Those who really wish to learn the possibilities of celluloid in various directions should obtain from the Field Museum *New Uses of Celluloid and Similar Materials in Taxidermy*, by Leon L. Walters, price 75 cents. (see review in *Museums Journal*, 1926, vol. 25, page 196).

Plant models in celluloid.

In the art of reproducing, in celluloid, leaves, flower-petals, etc., great success has been achieved, and a few notes made on the spot, while watching operations, may be helpful. Assuming the object to be a leaf, a plaster mould is made in two halves, one half for each surface of the leaf. A replica of each of these two half-moulds is then made in solder or type-metal, so that when fitted together they enclose a space having the exact form of the leaf. The halves are then firmly attached one to each arm of a hinged clamp, so that when the clamp is closed they meet exactly. A sheet of thin celluloid of suitable thickness is then chosen and heated in boiling water. The mould is also heated, and then the hot sheet of celluloid is put between the two halves of the heated mould and the halves pressed together by screwing the clamp up in a vice. In a few moments the celluloid has set in the form and pattern of the leaf, and can be removed and trimmed into final shape.

Leaf models in wax.

To mould leaves in wax the process is somewhat less complicated, and the methods used by the American Museum of Natural History, the Cleveland Museum of Natural History, and the Field Museum were essentially similar. A plaster mould is again made in two halves, one for each side of the leaf, but it is unnecessary to copy these in metal. The two plaster half-moulds are hinged together by their edges, or are mounted in a wood or metal clamp, so that when brought together they fit precisely. The materials required are hot melted bees-wax, jewellers' cotton (often called "cotton-wool" in England) and a supply of fine tapered wires for the midrib and prominent veins. The wires are tapered beforehand by tying them in bundles and dipping the bundle into strong acid for a few seconds. The bundle is then lifted out and held with

the wires vertical, so that the acid runs down, accumulates at the bottom end and drips off. This accumulation of acid towards the bottom causes the wire to be dissolved away more there, and each individual wire in the bundle thereby acquires a tapered form.

To make a reproduction of a leaf, the mould is either damped with warm water or oiled, a trace of jewellers' cotton is twisted round the wire chosen for the midrib, and the wire is placed in position in the groove in the lower half-mould. Then a filmy layer of jewellers' cotton is placed flat in the same lower half of the mould, but not reaching quite to the edges (*i.e.* not quite so large as the leaf). A spoonful of hot wax is now taken and poured rapidly over the jewellers' cotton and the top half of the mould pressed quickly and firmly into position. The jewellers' cotton gives toughness and rigidity to the wax. When cold the mould is opened and the wax leaf taken out. The same mould can be used to reproduce the same leaf over again scores of times, if need be. The wax leaf requires trimming at the edges, and I was informed that the best instrument for this purpose is not a pair of scissors but a safety razor. The edge is sandpapered after trimming (if need be) and worked with the fingers to give it the proper finish. Any colouring required is done with an air-brush or atomiser. (See Plate IX for plants in celluloid and wax.)

Those contemplating the making of model plants in wax should read the valuable paper on "Botanical Modelling for Museum Purposes," by W. E. Mayes (*Museums Journal*, 1925, vol. 25, page 127), and also the illustrated pamphlet "Plants of Wax," by Laurence Vail Coleman (American Museum of Natural History, Guide Leaflet No. 54, February 1922).

Making skeletons.

At the McGill University in Montreal, the Curator of Museums (Mr E. L. Judah) showed me some of his beautiful skeletal preparations and severely condemned the sand method as being invariably destructive of the fine surface of the bone. He always macerates with water, to which a little ammonia has been added, and then uses a patent degreaser—a steam-heated chamber in which the vapour of petrol removes all superfluous grease. The results that he has obtained prove his method to be excellent.

Habitat and life-history groups.

The wonderful habitat and life-history groups to be seen in many of the American museums are very impressive. They illustrate the forms and mode of life of various races of mankind as well as of mammals, birds and the lower animals. I had heard and read descriptions of these groups for years past, but there was one point that I had not grasped, namely the extent to which artificial light is used in their illumination. In most cases the rooms containing them are more or less dark, and the cases are illuminated in the interior by hidden electric lights. The artificial light is not so strong and penetrating as daylight, and this permits of a somewhat impressionistic way of treating accessories which would not give a satisfactory effect in daylight. It also prevents one from seeing that thin film of dust or smoke which gathers sooner or later and kills the illusion of life even in the best daylight groups. From the dramatic point of view these groups are an immense success and make a great appeal to the public, but I think they should not be multiplied unduly. The large ones take a great deal of space (some were 25 feet across by 13 feet deep) and their cost is enormous.

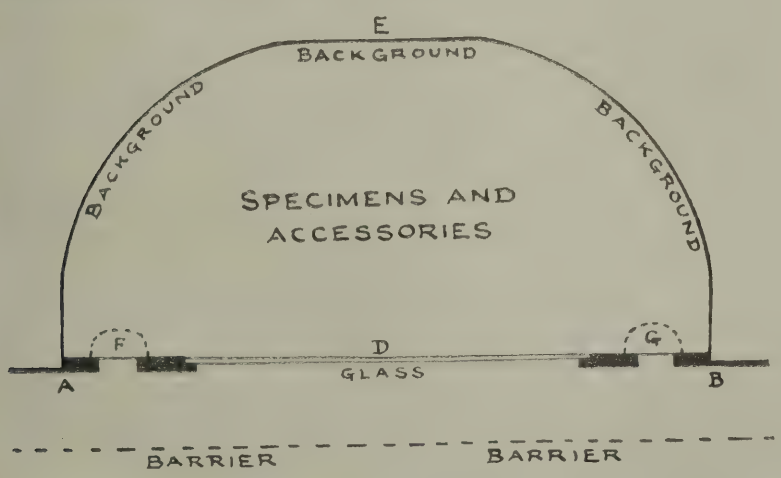
Among the really successful daylight groups, those in the United States National Museum at Washington illustrating the life of American Indian tribes take a high place. The figures are excellent. Some of the economic groups in the Commercial Museum at Philadelphia are also first-class. (Plate X.)

In the De Young Museum, Golden Gate Park, San Francisco, was the most life-like model of a human being (a Japanese) I have ever seen, said to have been carved from soft wood by a Japanese artist. The texture of the skin was perfect, the hair sprang naturally from the head and the eyes were brilliantly life-like, even under the closest scrutiny in broad daylight. Such perfection could only have been attained by untold labour and consummate skill.

In the New York State Museum, at Albany, there are further remarkable groups depicting American Indians of various tribes in their daily occupations—agriculture, warfare, domestic arts, etc.—but here the illumination is artificial and the visitor views them from a darkened bay. Under these conditions it has been possible to introduce painted landscape backgrounds, so that the whole countryside seems to be spread out before one, and it is difficult to say where the real objects end and the painted canvas begins.

In the American Museum of Natural History artificial lighting is almost universal for the fine groups depicting mammalian and bird life—examples being the Timber-Wolf and Flamingo groups with which all museum workers in Britain are familiar from illustrations. Another eminently successful bird group is illustrated in Plate XI.

Many groups gave one intense pleasure by reason of their artistic treatment and real beauty, and I believe the first essential for success is that the landscape background should be light in tone. This was not stated, but is the result of the impressions made upon me. Then again, this landscape background must be painted upon a rounded back, extending well beyond the limits of the glass front at each side and at the top. In plan, the successful cases are as shown in the following rough sketch :—



GENERAL PLAN OF CASE FOR HABITAT GROUP
WIDTH FROM A TO B 25 FEET: FROM D TO E 13 FEET (NOT TO SCALE)
IN SOME CASES SMALL GROUPS ARE INTRODUCED IN THE FRAMING AS AT F & G

Even under-water effects were beautifully rendered by artificial lighting, as for instance a Trout group in the Carnegie Museum at Pittsburgh and a group showing Swordfish and Ray swimming together in the Field Museum of Natural History in Chicago.

It is an important part of the duty of the expert electricians on the staffs of American museums to provide any desired effect by arrangement, strength and colour of electric lamps. These effects range from the full glare of a tropical noon to a grey dawn in which the rosy glow on a distant mountain-top heralds the new day.

Groups of extinct animals.

In the Carnegie Museum, the Director (Dr Avinoff) had added greatly to the interest of certain fossil mammalian remains by placing, on the same stand, small groups of models showing how the creatures appeared in the flesh. For instance, the remains of three individuals of the pig-like *Promerycochoerus* had three small models alongside showing how naturally they were lying in company when an unexplained death overtook them ; and three complete skeletons of a Miocene miniature camel seemed much more understandable by reason of the presence alongside of three small but spirited models. (Plate XII.)

Some very attractive cases in the New York State Museum at Albany portrayed the life of the sea at various periods in the Palaeozoic Epoch, and a large and wonderfully impressive group depicted the long extinct forest flora of the Devonian, the effect being heightened by the absence of glass, the steady drip of water from the rocks, and by the pervading and well-rendered primeval gloom.

Miniature groups.

I was very much attracted by the miniature groups seen in the Children's Museum at Brooklyn (under Miss Anna B. Gallup's charge) and at other places, such as the Cleveland Art Museum and the Commercial Museum at Philadelphia. In these are depicted, for instance, polar and desert landscapes (each with its characteristic fauna), scenes from the life of savage man, episodes in history, and the processes of agriculture—all in a very striking manner. The cases averaged probably 4 feet wide by 3 feet high by 2 feet deep, and the human figures varied from 2 or 3 inches to say 6 inches in height. All were lighted artificially and were most entertaining and informative. One soon adjusted one's self to the small scale and the scenes then became most realistic. (See Plates II and III.)

Nature trails.

The latest phase of American museum work appears to be the preparation and maintenance of " nature trails." These are sections of woodland or other type of country in which the trees, herbs, and comparatively stationary animals (such as web-weaving caterpillars, etc.) have been labelled so that visitors may identify them, and, from them, the things they meet with in their walks. The American Museum of Natural History has established several in the Interstate Park, with the co-operation of the Park Commission, and arranges excursions by classes and parties for instruction in their right use.

The most extraordinary of these " nature trails " is at San Diego in California, where the management of the Indian Springs Museum has formed a trail and furnished the belt of country on either side of it with stuffed examples of the mammals, birds and reptiles which occur round about in the wild state ! Here is indeed an open-air museum, and on this " last word " this Appendix may fittingly end.

PLATE XI

A GLIMPSE OF PELICAN ISLAND, FLORIDA

A bird group in the American Museum of Natural History, New York; by courtesy of the American Museum.

PLATE XII

FOSSIL GROUP

Fossil skeletons of *Stenomylus hitchcocki*, Loomis, with models alongside, in the Carnegie Museum, Pittsburgh; by courtesy of the Carnegie Museum.

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